Project Description

Phase II Community Groundwater Monitoring, Analysis and Planning in Sierra Nevada Granitic Fractured Rock within the Non-Basin region of eastern Fresno County

In February 2012, the Sierra Resource Conservation District (SRCD) of eastern Fresno County in partnership with the Fresno County Water Advisory Committee's (FCWAC) Groundwater Subcommittee; Sierra Unified School District (SUSD); the Lyles College of Engineering at CSU Fresno and Natural Resources Conservation Services (NRCS) completed Phase I of a community groundwater program under a grant from the California Department of Water Resources (DWR) Local Groundwater Assistance program. Phase I included the initial collection of data/information of groundwater quantity and quality within the unincorporated communities of Prather, Auberry and Tollhouse, (http://www.usjrwatershed.org/groundwater-program-2013-2010-2011). These three communities with an approximate population of less than 10,000 residents are within the Big Sandy Watershed of the upper San Joaquin River Basin within the southern Sierra Nevada foothill region, (USGS HUC 18040006) approximately 20 miles east of the Fresno Metropolitan area. Under DWR's California Water Plan (CWP-2009) the proposed project area is within the East Side Uplands of the San Joaquin Region's Planning Sub-Area 05 (PSA-05) and is further delineated within the Detailed Analysis Unit (DAU-203). The analysis indicates an estimated groundwater depletion of approximately 750 acre feet per annum within the Fresno County portion of the DAU. Past analysis has indicated that the overall water balance may be precarious.

The eastern portion of the County is geologically situated in a granitic fractured rock non-basin area; in which 99% of all water demand is reliant upon groundwater predominately through private wells and is outside of Fresno County's AB3030 Groundwater Management Plan as adopted on March 11, 1997. It should be noted that subsequently Fresno County has declared the eastern portion of the County to be a "water scarce" region – and has supported efforts to better manage these finite resources through research, education and policy changes. Most recently under the prior grant, the WAC has adopted a Technical Memorandum as a "Blue Print" for this project proposal and improved groundwater management in non-basin areas of eastern Fresno County.

In the mix are a number of commercial and public wells which make up a small fraction of the total well count. However, these types of operations can use significant amounts of groundwater for consumptive use. To-date groundwater usage has been estimated – but, not ever verifiably monitored and measured.

This project as proposed would use two school sites in which to monitor and track groundwater usage with seasonal and long term trends analyzed. The intent is to use the two school sites to better understand the underlying geology and hydrological processes – and the subsequent recharge capabilities with a goal of long-term sustainability of these key wells over time. Information collected on a real-time basis will also be integrated with DWR's CASGEM (California State Groundwater Elevation Monitoring) and WDL (Water Data Library) databases. Furthermore, it is expected that the approach, protocols, methodologies and state-of-the-art technologies utilized can be a framework for conducting further studies with the Southern Sierra Integrated Regional Water Management (IRWM) Planning Group and their communities that rely upon groundwater as a major resource.

The long-term goal is to have the community understand through information provided and consensus as to the current and future groundwater supply with verifiable and real-time data. With public

awareness, then Fresno County can move forward on developing groundwater management policies with long-term sustainability – with the greater likelihood of public acceptance and support.

To achieve these goals, it is the intent with this project to continue to bring forward policy, professional, research and educational partnerships along with community participation with the following seven (7) entities:

- Sierra Resource Conservation District – Program/Project Management and Administration
- Sierra Unified School District – Groundwater Monitoring Access and Support
- Fresno County Water Advisory Committee and Groundwater Subcommittee – Policy and Technical Advice for implementation of Technical Memorandum
- Lyles College of Engineering, CSU Fresno – Research and Analysis
- Engineering Service Professionals – SCADA (System Control and Data Acquisition) and Telemetry Implementation
- California Department of Water Resources – Groundwater Planning Analysts (PSA / DAU) and CASGEM / WDL staff
- Southern Sierra IRWM Group – Collaboration, data-sharing, proof of concept, and applicability

The overall technical feasibility and merits have been demonstrated through the Fresno County Water Advisory Committee's support for this project as documented in their Technical Memorandum as a "Blue Print" for conducting monitoring and planning towards managing scarce groundwater resources. Secondly, the SCADA engineering resources have conducted an assessment of the existing groundwater management system at the two school sites and have developed a comprehensive design and implementation plan for monitoring, data collection and analysis – as well as remote access and data sharing with appropriate entities such as DWR and integration with CASGEM/WDL. It is expected that once the monitoring and data collection system with remote access is implemented – that there will be minimal incremental costs associated with its on-going operation.

These key collaborative partners will work together to coordinate and integrate the following eight (8) major task deliverables; which will be detailed within the Project Work Plan Document:

1) Upgrade Well Management Systems (2 School Sites: System Control & Data Acquisition - SCADA) with Remote Access based upon Fresno County WAC's Technical Memorandum
2) Integrate Well Management SCADA System with DWR's CASGEM/WDL Program
3) Integrate Well Management SCADA System with Fresno County's Database System / California Water Institute
4) Establish Educational Research Program at Sierra High/Middle School and Expand Program at Lyles College of Engineering, CSU Fresno
5) Determine initial groundwater quantity conditions and develop trend analysis capabilities
6) Establish Community Outreach and Education Program (4 meetings & 4 articles) and update website
7) Project Office Operations and Administration (2.5%)
8) Four (4) Quarterly Reports, Final Project Report and Invoicing

The overall request for LGA funding is $141,675.00 of which Task 1 is 81% of the total and Direct Administration cost is 2.5% (Task 7). In addition, the expected match is $18,100.00. The total cost is: $159,775.00. It is expected that the project duration will not exceed twelve (12) months from date of Grant Agreement Execution target of April, 2013.